



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

quently *radii vectores* to the points at infinity which are parallel to them, also enclose a right angle.

The triangles for sunrise and sunset are similar, and the *radii vectores* being parallel to tangents to SZ at Z , Z must equal 135° . Hence by Napier's rules

$$\begin{aligned}\sin S &= \cos 45^\circ \cos \varphi \\ &= \frac{1}{2} [\sin (45^\circ + \varphi) + \sin (45^\circ - \varphi)]. \quad Q. E. D. \\ &\quad [A. C. Lane.] \end{aligned}$$

EXERCISES.

151

INTEGRATE the differential

$$\frac{\sin \theta + \cos \theta}{\sin^4 \theta + \cos^4 \theta} d\theta. \quad [E. Frisby.]$$

152

IF r and r' be *radii vectores* in a parabola, and $2f$ the difference of the true anomalies, the area of the parabolic sector between the *radii* is

$$\frac{1}{3} \sqrt{(rr')} \sin f \cdot (r + r' + \sqrt{(rr')} \cos f). \quad [A. Hall.]$$

153

THE normals to a parabola at the points P, Q, R pass through the point O and meet the axis at the points P_1, Q_1, R_1 ; S is the focus and $4a$ is the length of the *latus rectum*; show that

$$PP_1 \cdot QQ_1 \cdot RR_1 = 8a^2 \cdot SO. \quad [R. H. Graves.]$$

154

FIND the locus of the point from which the four normals drawn to an equilateral hyperbola form an harmonic pencil. [R. H. Graves.]

155

A TELLS the truth b times out of a ; B , whose veracity is unknown, joins A in affirming the occurrence of an event. What is the probability that the event did occur? [Artemas Martin.]

156

A HAWK which is 100 yards vertically above a hare that is running with a uniform velocity in a straight line on a level plane, starts in pursuit, and flying continually toward the hare with a uniform velocity, catches the hare at a point 100 yards distant from where the hare was when the hawk started. What is the length of the curve described by the hawk while in pursuit. [J. E. Hendricks.]